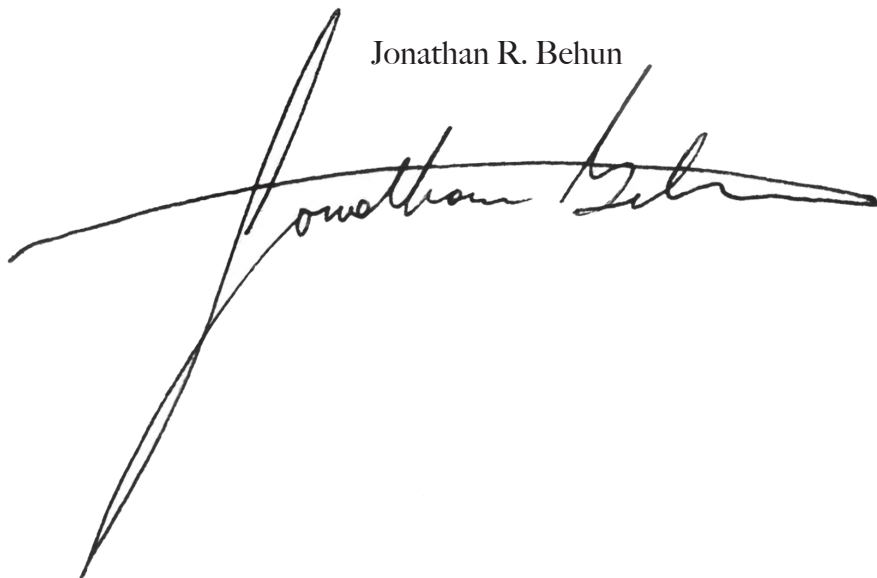




# VISUAL COMMUNICATION SOLUTIONS

Jonathan R. Behun



REFERENCE

**BEHUN**®

CONCEPTUALIZATION

GRAPHIC DESIGN

ILLUSTRATION

WEB DEVELOPMENT

PRODUCTION

# INTRODUCTION

POSTERS

PRESENTATIONS

SIGNAGE

COVER IMAGES

LOGOS

BROCHURES

FLYERS

CERTIFICATES

FLOW CHARTS

PRODUCT LABELS

VEHICLE MARKINGS

PATCHES

APPAREL

TECHNICAL DRAWINGS

COINS

WEB DEVELOPMENT

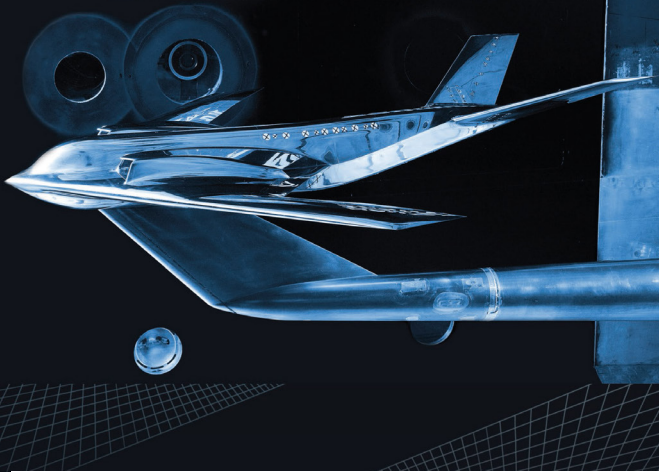
The following graphic designs and illustrations have been developed primarily for the National Aeronautics and Space Administration (NASA). These communications support a variety of missions and projects for the Agency across multiple NASA Centers nationwide, private industry, and international partners. The most notable is the Ares I-X mission that successfully flew in October 2009. Ares I-X was the first full scale test vehicle for the new generation of American human spaceflight vehicles under NASA's Constellation Program.



## USER GUIDE



## National Transonic Facility



www.nasa.gov

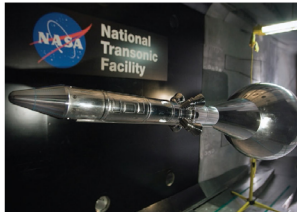
## VI - NOTABLE NTF STUDY DETAILS

A wide variety of aerospace vehicles have undergone NTF testing and assessment, including studies related to cruise performance, configuration aerodynamics, stability and control, and stall-buffet onset.

Since its commissioning, the NTF has evaluated models of the space shuttle, the space shuttle booster and the shuttle booster stack, the Delta II Heavy Launch Vehicle, the F-18 E/F Super Hornet, the blended-wing-body aircraft, the Grumman X-29 experimental airplane, and even the Sea-wolf submarine. The facility's ability to obtain near-flight Reynolds numbers has proven essential in accurately predicting aerospace-vehicle behavior under real-world flight conditions.

Details of such testing appear below:

## Orion Multi-Purpose Crew Vehicle (MPCV)



The MPCV spacecraft includes crew and service modules, a spacecraft adaptor, and a launch-abort system. Much larger than its Apollo predecessor, the MPCV can support more crewmembers for short or long-duration missions. The service module is the powerhouse that fuels and propels the spacecraft, stores air and water, and provides space for scientific experiments and cargo.

A 6%-scale MPCV model, including the craft's launch-abort system, was assessed in the NTF to gather launch-related aerodynamic data.

## Fundamental Aerodynamics Subsonic Transonic Modular Active Control (FASTMAC) Model



NASA is working with industry, university, and Department of Defense partners to advance the state of the art in prediction techniques associated with circulation control. To better understand the limitations of experimental and computational fluid dynamics (CFD) techniques, researchers are conducting low-speed, physics-based experiments that emphasize off-body measurements.

Using the Fundamental Aerodynamics Subsonic Transonic Modular Active Control (FASTMAC) semi-span model, an NTF experiment was conducted to evaluate the effect of Reynolds number on circulation-control aerodynamics, and to develop a FASTMAC open dataset for CFD code validation. The effect of varying the span-wise blowing distribution was also investigated, and cryogenic pressure-sensitive paint data were acquired.

The FASTMAC model was tested in two configurations: low-speed high-lift and high-speed cruise. The effect of Reynolds number on circulation-control aerodynamics was successfully documented during this test, and an open dataset for CFD code validation was created. A significant increase in lift at low speed was measured, as well as a drag reduction at high-speed conditions. Control of the shock on the wing was also successfully demonstrated.

## NOTABLE NTF STUDY DETAILS

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## Cover Layout

## Sub-cover Layout



## DATA ACQUISITION / REDUCTION

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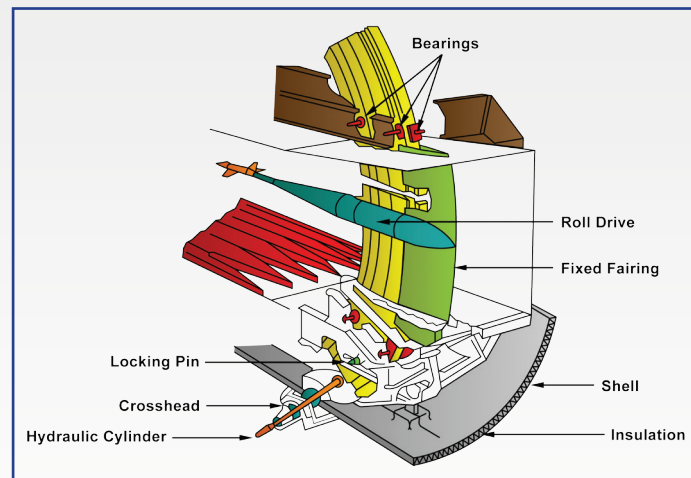
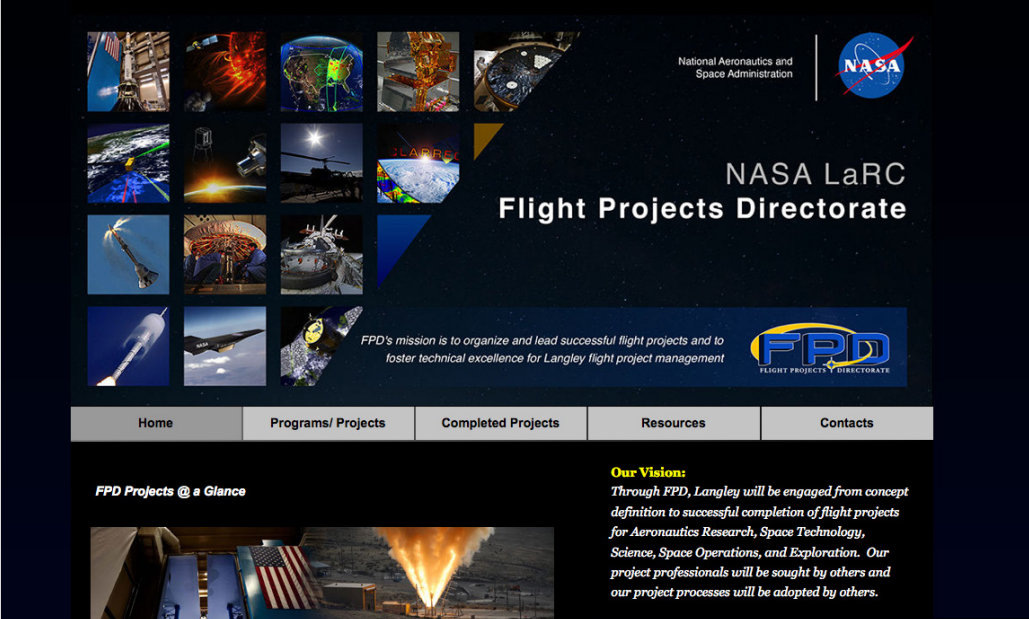


Figure Re-Draw

## Body Layout





FPD Home Page



ORION LAS Project Home Page



Resource Page

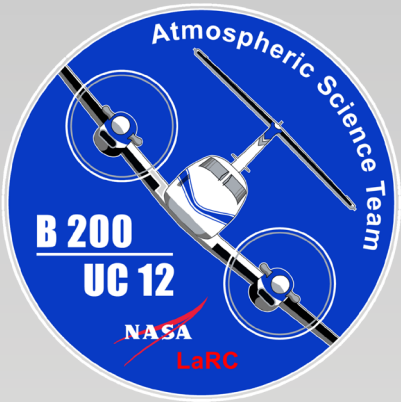


# Ares I-X

*The First Flight of a New Era*

Developed by: NASA LaRC, NASA MSFC/Teledyne Brown/ATK Thiokol/Lockheed Martin,  
NASA GRC, NASA JSC, NASA KSC/United Space Alliance  
[www.nasa.gov](http://www.nasa.gov)

B200 UC 12



S&MAO



MISSE-X



TEMPO



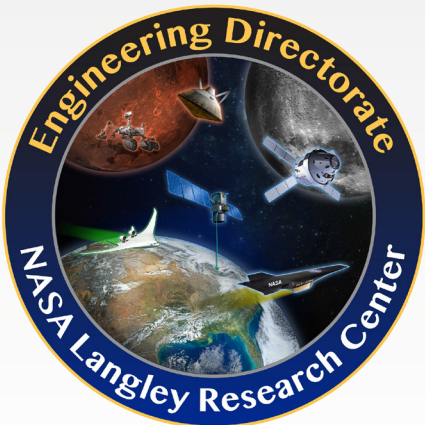
STEP



ETDD



LaRC ED



FPD





NASA HUMAN EXPLORATION



NASA ORION



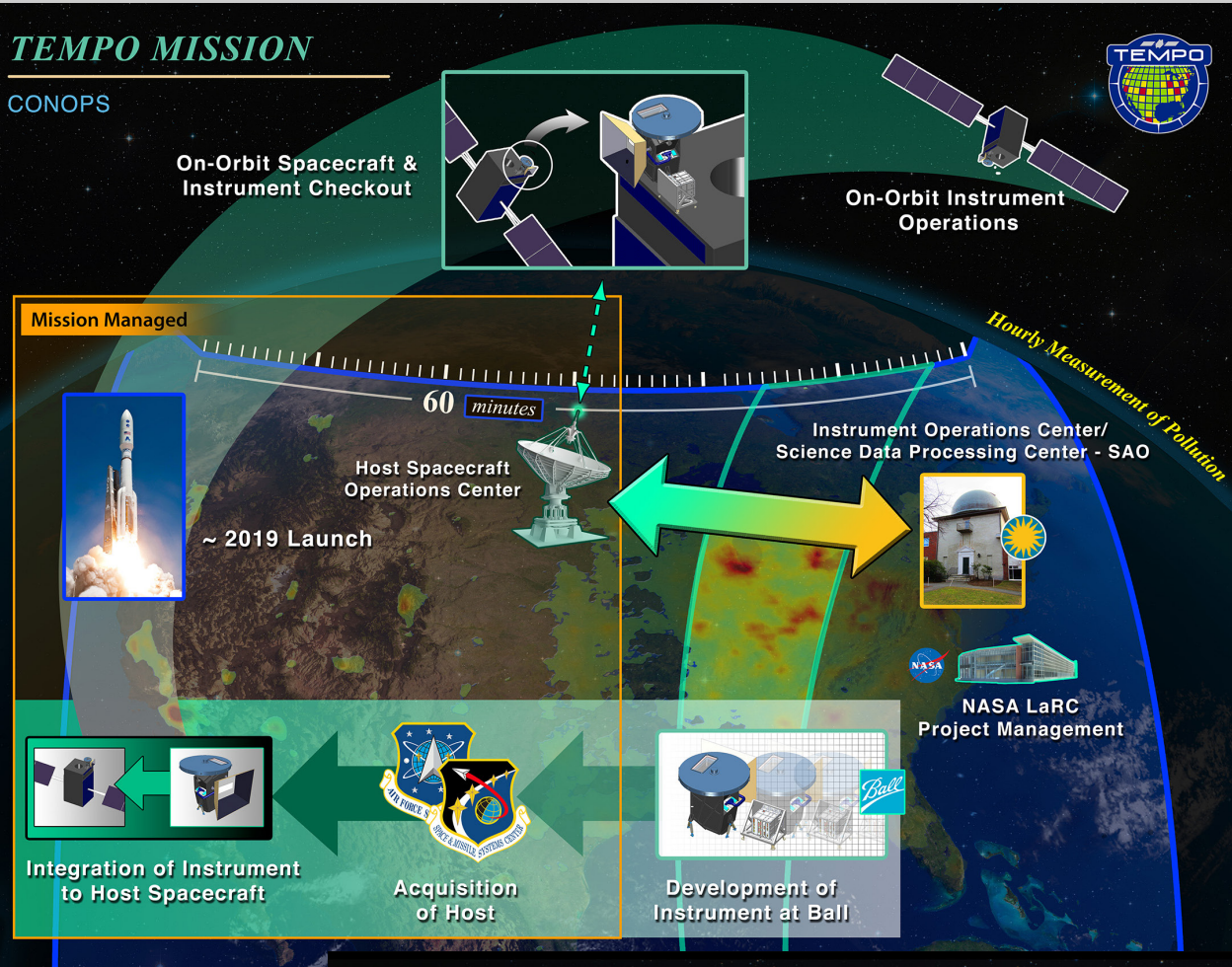
NASA ORION LAS



NASA PAD ABORT-1

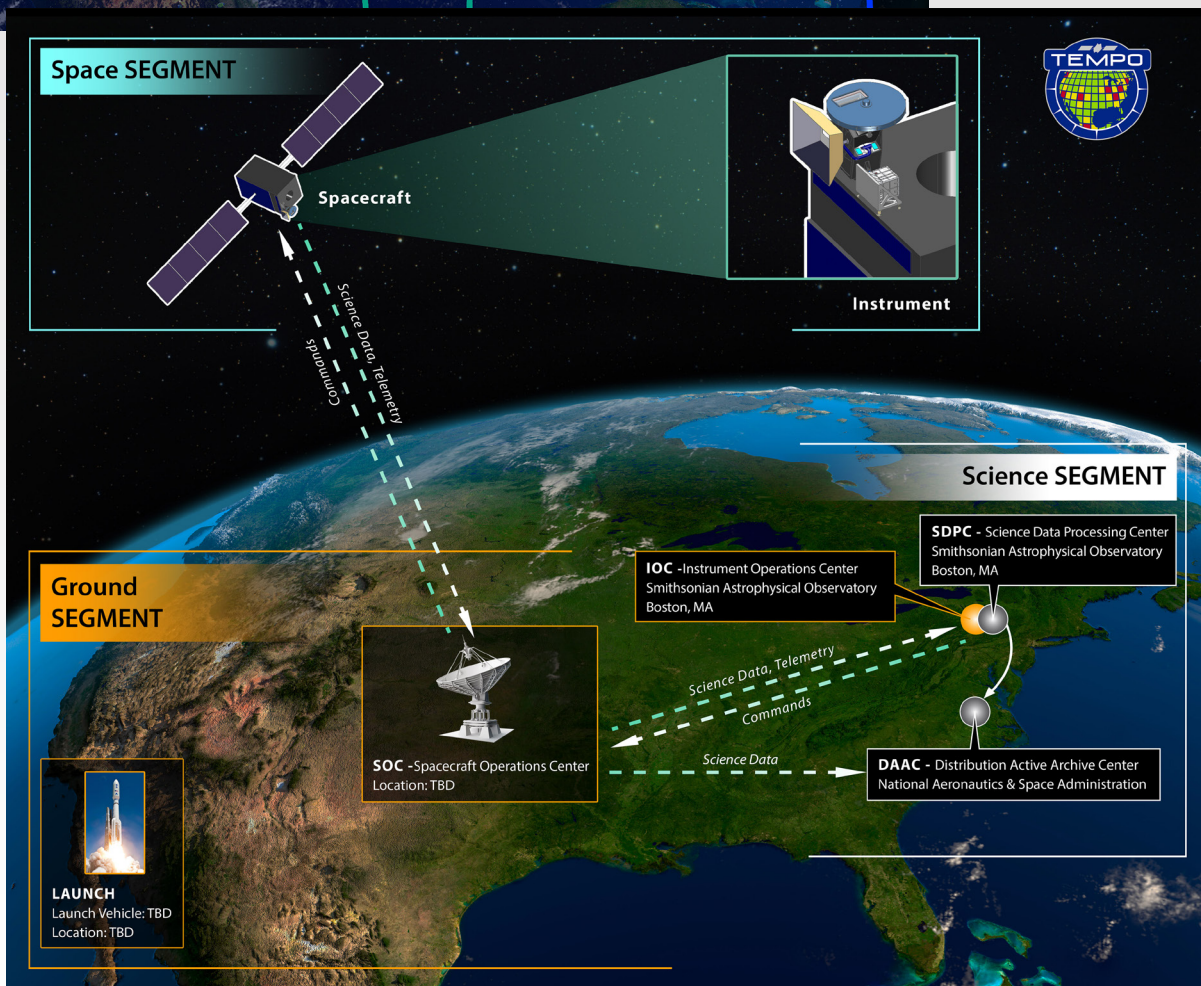
# TEMPO MISSION

CONOPS



CONOPS

## MISSION ARCHITECTURE





National Aeronautics and  
Space Administration



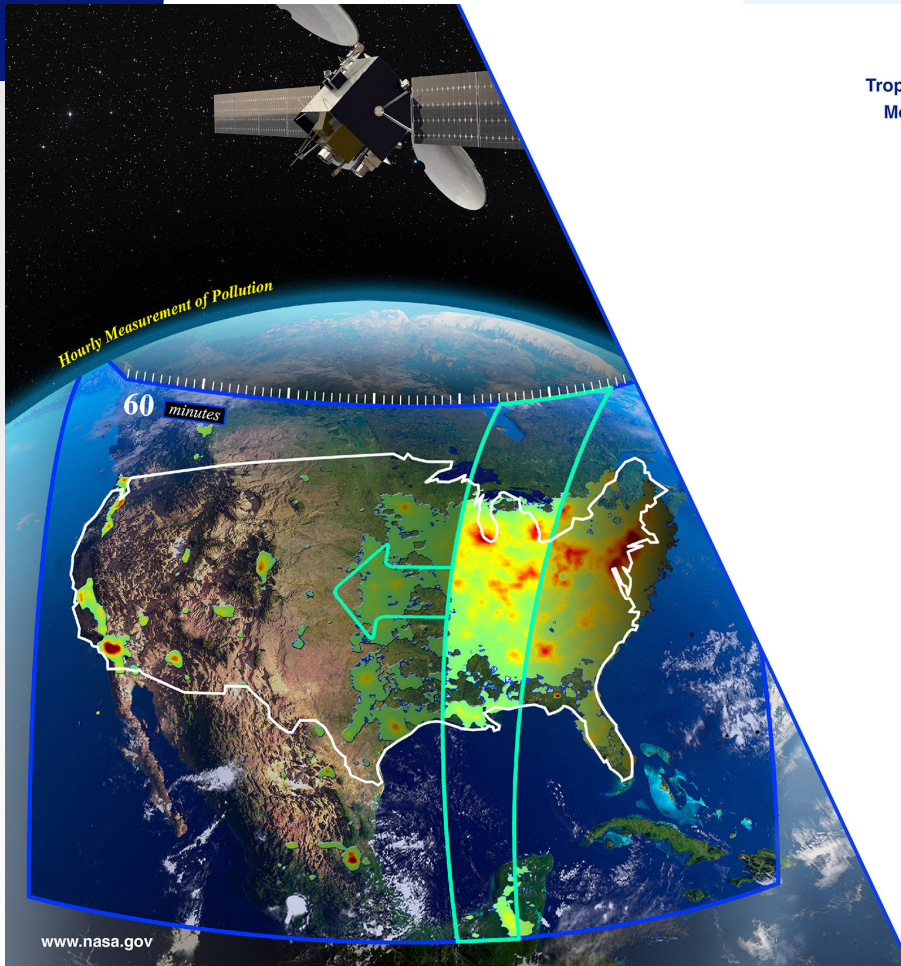
MISSE-X

Power Point  
Cover Image



[www.nasa.gov](http://www.nasa.gov)

TEMPO  
Power Point  
Cover Image



Tropospheric Emissions:  
Monitoring of Pollution



# Ares I-X Apparel



back print

## Gildan 6.1 oz Ultra Cotton Tee

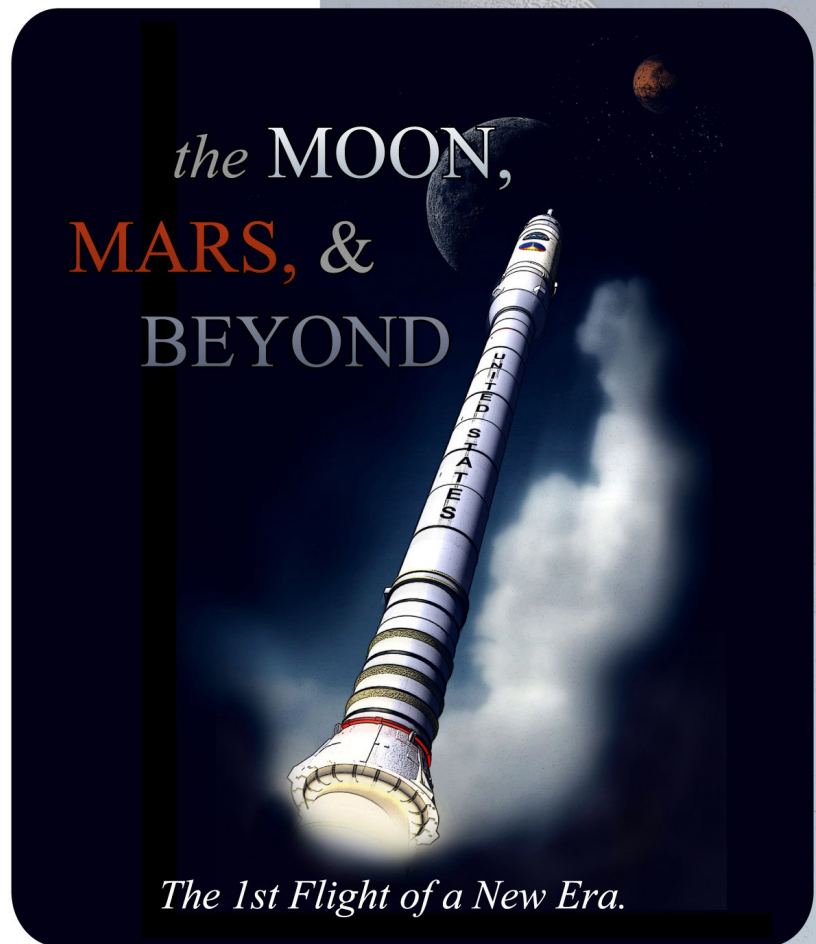
Ultra style, ultra comfort!

Product details: 100% preshrunk heavyweight cotton, 6.1 oz., seamless collar, taped neck and shoulders, double-needle throughout.

application : screen printed

garment color : black

available sizes : S - 3XL



front print



front print



back print



## Black Rocket Tee

**LaRC Oktoberfest**  
presented by the  
**LaRC Exchange**

join us **October 22nd**

**2010**

**MAIN EVENT...**

**4:00-9:00 pm - Food, Games, and live Music at the Reid Picnic Pavilion**  
POC: Donis Anders  
donis.m.anders@nasa.gov

**CFC EVENTS...**

**11:00 am - Pumpkin Fest in the Cafeteria**

**2:00 pm - Pa**  
P  
lindsay

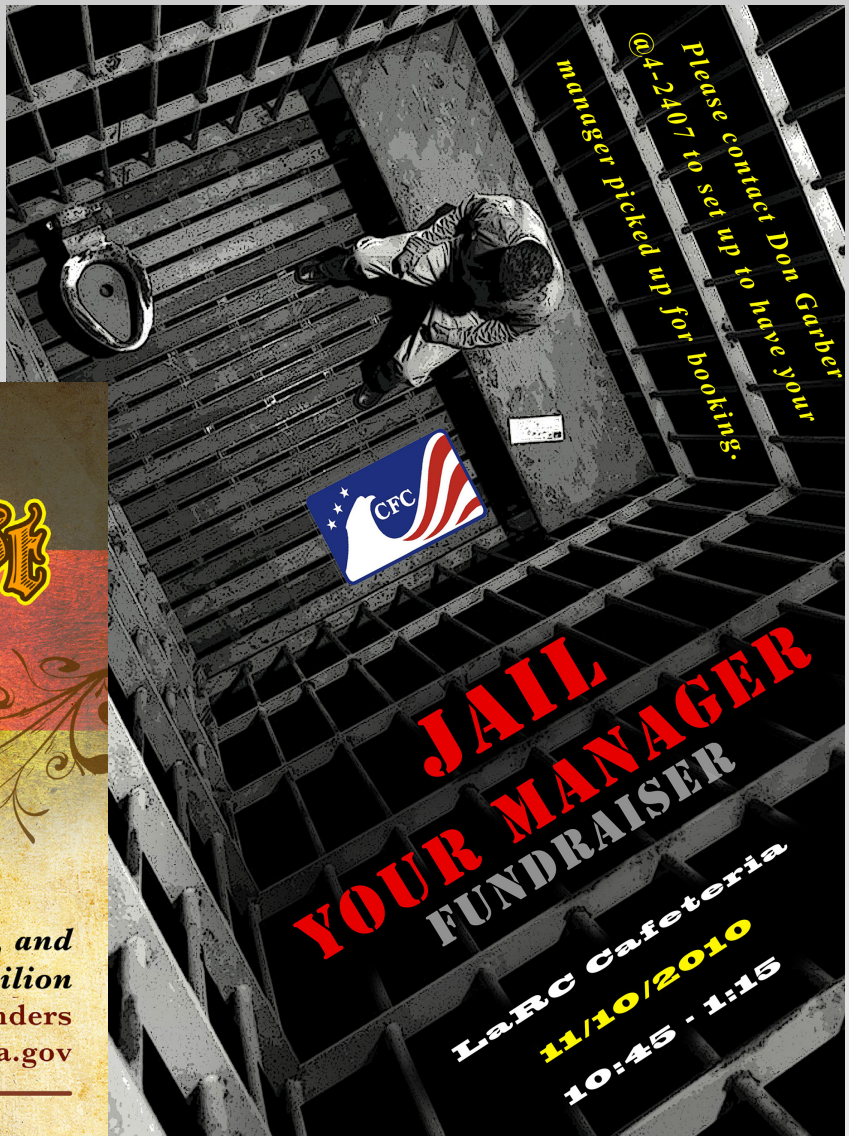
Combined Feder  
Langley Emerging Professionals So



Please contact Don Garber  
@4-2407 to set up to have your  
manager picked up for booking.

**JAIL  
YOUR MANAGER  
FUNDRAISER**

**LaRC Cafeteria  
11/10/2010  
10:45 - 1:15**



**CFC & LEPSC  
Events Present**  
*the Up and Coming, First Ever!*  
**LaRC Parade & Car Show**

**PRIZES** **DASH PLAQUES** **and MORE!**

Prepare your worthy Car, Truck, or Motorcycle to enter in a parade and static show on October 22nd. Open to all makes, models, and years.

A nominal donation to CFC will be accepted for registration. Looking for... Best Sound System - Best "Geek-My-Ride" - Classics - Motorcycles - Trucks - Most Traveled

Donations made through this event will be counted as undesignated contributions to the CFC and distributed according to CFC regulations.

**POC for Registration:**  
Lindsay Rogers  
lindsay.m.rogers@nasa.gov  
864.7283  
or Wendy Pennington  
wendy.f.pennington@nasa.gov  
864.7126

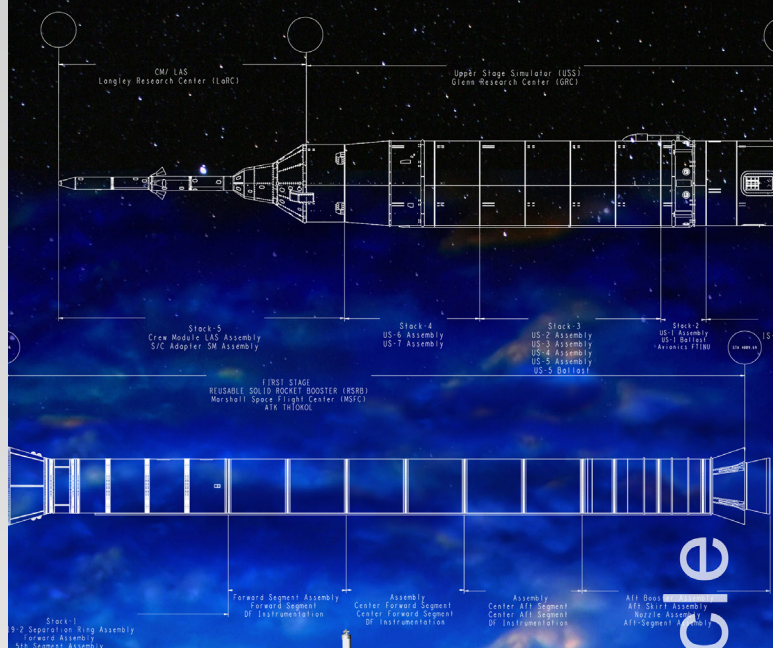
Combined Federal Campaign &  
Langley Emerging Professionals Social Committee





# Ares I-X

-Bob Ess, *Mission Manager*



for exploration.

# flight test vehicle



**Launching April 2009**

# Ares I-X



National Aeronautics and Space Administration



# Ares I-X

"The First Flight of a New Era."

Launched October 28, 2009

NASA PRESENTS THE ARES I-X FLIGHT TEST LAUNCH PRODUCED BY THE OFFICE OF THE ADMINISTRATOR

DIRECTED BY THE CONSTELLATION PROGRAM AND THE MISSION MANAGEMENT OFFICE

NASA ADMINISTRATOR **MIKE GRIFFIN** NASA DEPUTY ADMINISTRATOR **SHANA DALE** NASA ASSOCIATE ADMINISTRATOR **CHRISTOPHER SCOLESE** CONSTELLATION PROGRAM MANAGER **JEFF HANLEY** CONSTELLATION PROGRAM DEPUTY MANAGER **MARK GEYER**  
MISSION MANAGER **BOB ESS** MISSION DEPUTY **STEVE DAVIS** MISSION DEPUTY **JON COWART** SEBI CHIEF **MARSHALL SMITH** MISSION PROJECT INTEGRATION MANAGER **BRUCE ASKINS** MISSION BUSINESS MANAGER **JOHN HOWELL**  
SAMA LEAD **DAN MULLANE** LEAD **JOE BRUNTY** KSC CHIEF ENGINEER **SHAUN GREEN** SEBI LEAD **KURT DETWEILER** RSCS PT LEAD **RON UNGER** FIRST STAGE PT LEAD **CHRIS CALFEE**  
CMLAS PT LEAD **JONATHAN CRUZ** ALCORCS PT LEAD **KEVIN FLYNN** GROUND OPERATIONS PT LEAD **TASSOS ABADIOTAKIS** GROUND SYSTEMS PT LEAD **MIKE STELZER** UPPER STAGE PT LEAD **VINCE BILARDO**



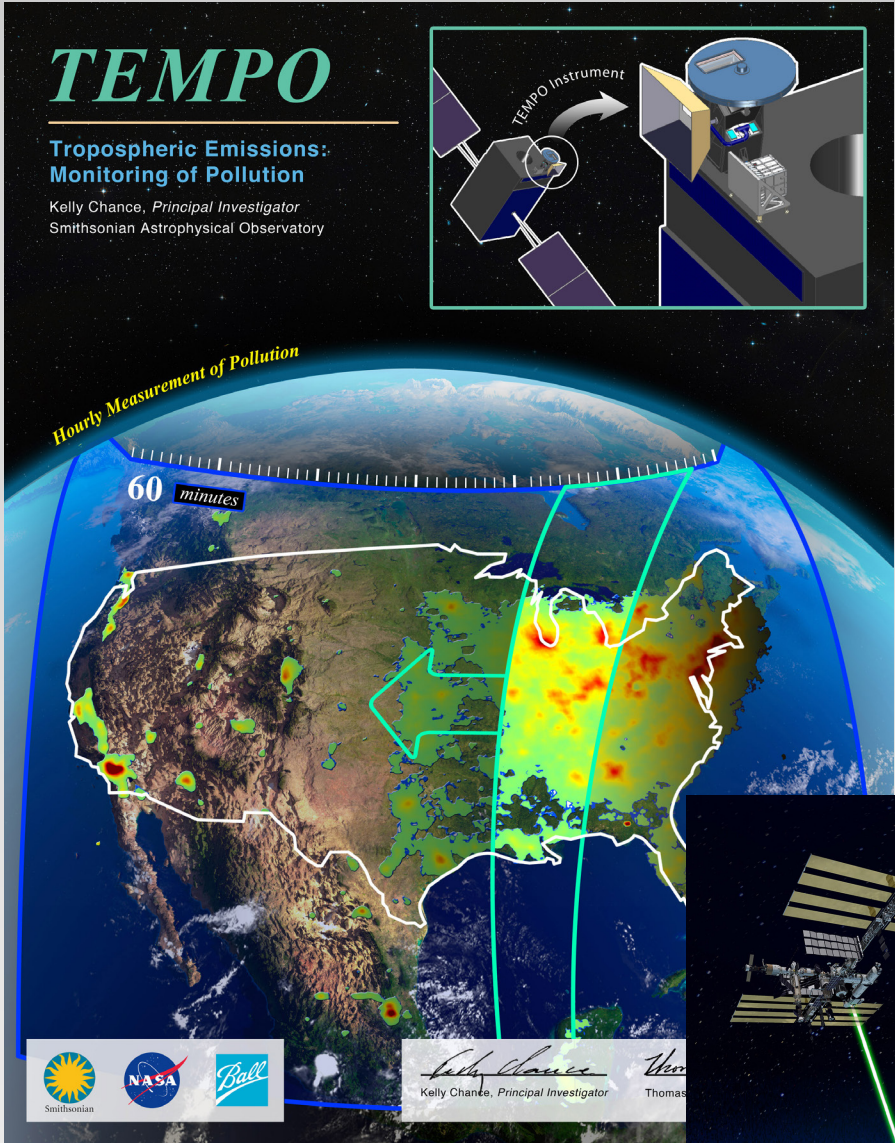
[www.nasa.gov](http://www.nasa.gov)

SHOT ON LOCATION AT  
GRC, KSC, LaRC, & MSFC

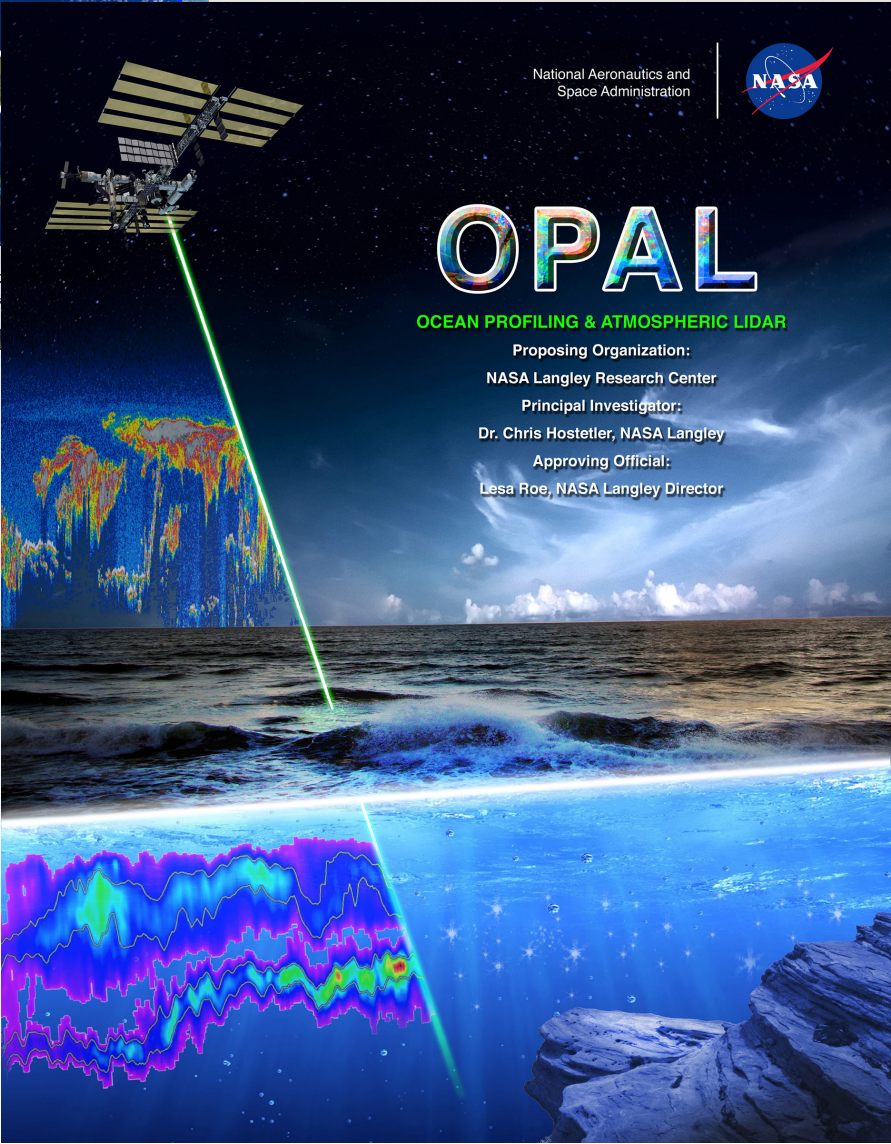
ARES I-X

BEHUN

POSTER



TEMPO



OPAL



# Ares I

Crew Launch Vehicle

# Orion

Crew Exploration Vehicle

## Ares I-X

NASA's first flight test of the full rocket for the agency's next-generation spacecraft and launch vehicle system

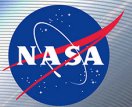
# Ares V

Cargo Launch Vehicle

# Altair

Lunar Lander

www.nasa.gov



## Space Technology Grand Challenges



Expand Human Presence in Space

Manage In-Space Resources



## Game Changing Development Program

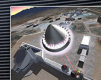
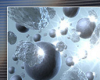
Level II Program Office: LaRC

### OBJECTIVE:

Innovative, novel, and unique technology development that promises to enable revolutionary improvements in our country's space capability

- Promote innovative capabilities that cut across many NASA specific needs
- Demonstrate promising technologies for high payoff advancement
- Promote revolutionary technology advancement to radically change the way NASA approaches its missions

TRL Maturation: From TRL 3-4 to TRL 5-6



Enable Transformational Space Exploration and Scientific Discovery

Provide economical, reliable, and safe access to space, opening the door for robust and frequent space research, exploration and commercialization

### MAIN ACHIEVEMENT:

- Demo large scale (> 5m dia) cryo prop tank & improve performance over entire environmental envelope
- Develop and demonstrate inflatable and deployable space structures

## Lightweight Materials & Structures

LaRC-led PROJECTS



## Adaptive Entry Systems

Develop entry, descent, and landing systems with the ability to deliver large-mass, human and robotic systems, to planetary surfaces

### MAIN ACHIEVEMENT:

- Demonstrate an inflatable earth entry system
- Raise to TRL 5 a deployable lifting and low ballistic coefficient entry system
- Raise to TRL 5 flexible ablative TPS



www.nasa.gov





Aeronautics Systems  
Engineering Branch

**Kathy Stacy**

**Rm 105**



**CERES**

Project Offices

**Phil Brown**

*CERES Instrument  
Project Manager*

**Rm 221**

TEAMS 2



Analytical Mechanics Associates Inc.

**Dr. Christopher Fannin**  
*Program Manager*

**Rm 112**



NORTHROP GRUMMAN

PRAXIS INC.

